POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern standard civil time	Heliographic Diff. long.	Heliographic Longitude	Heliographic Latitude	Area Spot	Area Group	Total area for each day
1930	h m	°	°	°			
Dec. 3 (Naval Observatory)	11 45	+20.5	37.3	+9.0	------	93	------
		+71.0	87.8	+14.0	------	93	186
Dec. 4 (Naval Observatory)	10 47	+33.5	37.6	+8.5	------	93	------
		+75.5	79.6	+16.5	------	46	139
Dec. 5 (Mount Wilson)	12 50	+49.0	38.9	+9.0	------	32	32
Dec. 6 (Mount Wilson)	13 40	+60.0	36.2	+10.0	9	------	9
Dec. 7 (Mount Wilson)	12 30	+80.0	43.6	+9.0	16	------	16
Dec. 8 (Naval Observatory)	10 46	------	------	------	------	------	(*)
Dec. 9 (Naval Observatory)	13 33	−74.0	222.7	+5.0	------	170	170
Dec. 10 (Perkins Observatory)	11 37	−64.5	220.2	+5.0	------	186	186
Dec. 11 (Mount Wilson)	14 0	−55.0	215.2	+3.0	------	11	------
		−48.0	222.2	+11.0	------	5	------
		−48.0	222.2	+5.0	83	------	------
		−37.0	233.2	+17.0	------	9	108
Dec. 12 (Naval Observatory)	11 5	−37.0	221.6	+6.5	------	93	------
		−36.0	222.6	+10.5	15	------	------
		+26.0	284.6	+11.5	9	------	117
Dec. 13 (Naval Observatory)	11 40	−22.5	222.6	+6.0	------	123	123
Dec. 14 (Mount Wilson)	14 10	−16.0	214.5	+6.0	14	------	------
		−5.0	225.5	+6.0	------	80	------
		+10.0	240.5	−12.0	------	90	184
Dec. 15 (Naval Observatory)	11 44	+7.0	225.7	+6.5	19	------	------
		+21.5	240.2	−12.0	------	77	96
Dec. 16 (Naval Observatory	11 57	+32.0	237.4	−11.0	31	------	------
		+38.5	243.9	−14.0	------	62	93
Dec. 17 (Yerkes Observatory)	12 43	−75.0	116.8	−7.1	260	------	------
		−67.8	124.0	−8.6	266	------	526
Dec. 18 (Naval Observatory)	11 10	−69.5	110.0	−10.0	62	------	------
		−55.0	124.5	−11.5	------	31	------
		+48.0	227.5	+12.0	31	------	------
		+60.0	239.5	−12.0	------	31	------
		+67.5	247.0	−13.0	------	31	186
Dec. 19 (Mount Wilson)	14 45	−82.0	82.4	+17.0	19	------	------
		−55.0	109.4	−9.0	162	------	------
		−49.0	115.4	+10.0	------	30	------
		−41.0	123.4	−11.0	------	11	------
		−26.0	138.4	−8.0	------	4	------
		+61.0	225.4	+11.0	------	166	------
		+80.0	244.4	−15.0	------	30	422
Dec. 20 (Naval Observatory)	13 54	−40.0	111.6	−9.0	123	------	------
		−33.0	118.6	+10.0	31	------	154
Dec. 21 (Naval Observatory)	11 10	−29.0	110.9	−9.5	------	108	------
		−21.0	118.9	+9.0	15	------	123
Dec. 22 (Naval Observatory)	11 49	−39.5	86.9	+12.0	31	------	------
		−12.0	114.4	−9.5	------	108	------
		−9.5	116.9	+9.8	31	------	170
Dec. 23 (Naval Observatory)	11 28	−1.5	111.9	−9.5	------	108	------
		+30.0	143.4	+2.0	------	62	170
Dec. 24 (Naval Observatory)	11 9	−16.5	83.9	+15.0	31	------	------
		−11.5	88.9	+13.0	------	62	------
		+12.5	112.9	−8.5	------	77	170
Dec. 25 (Naval Observatory)	11 5	+2.5	89.8	+13.0	------	62	------
		+6.5	93.8	+16.0	45	------	------
		+26.0	113.3	−8.5	------	31	138

* No spots.

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern standard civil time	Heliographic Diff. long.	Heliographic Longitude	Heliographic Latitude	Area Spot	Area Group	Total area for each day
1930	h m	°	°	°			
Dec. 26 (Mount Wilson)	14 15	−52.0	20.4	+10.0	------	6	------
		−33.0	39.4	+9.0	------	6	------
		+5.0	77.4	+19.0	------	4	------
		+17.0	89.4	+14.0	------	115	------
		+39.0	111.4	+7.0	5	------	------
		+39.0	111.4	−9.0	------	4	140
Dec. 27 (Naval Observatory)	12 46	−32.0	28.0	+11.5	------	108	108
Dec. 28 (Mount Wilson)	13 0	+45.0	91.7	+13.0	72	------	72
Dec. 29 (Naval Observatory)	12 33	+68.5	102.3	+17.0	46	------	46
Dec. 30 (Naval Observatory)	10 45	+70.0	91.6	+17.0	------	62	62
Dec. 31 (Naval Observatory)	11 17	------	------	------	------	------	(*)
Mean daily area for December							160

* No spots.

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR DECEMBER, 1930[1]

[Data furnished through the courtesy of Prof. W. Brunner, University of Zurich, Switzerland]

December, 1930	Relative numbers	December 1930	Relative numbers	December, 1930	Relative numbers
1	a 47	11	21	21	c 35
2	36	12	------	22	28
3	35	13	15	23	a 31
4	21	14	22	24	45
5	8	15	a 22	25	a 52
6	8	16	20	26	53
7	7	17	d 30	27	41
8	c	18	d 52	28	26
9	E 8	19	Wcc 50	29	9
10	19	20	42	30	15
				31	14

Mean: 28 days=28.0.

[1] Dependent alone on observations at Zurich and its station at Arosa.

a=Passage of an average-sized group through the central meridian.
b=Passage of a large group through the central meridian.
c=New formation of a large or average-sized center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central zone.
d=Entrance of large or average-sized center of activity on the east limb.

AEROLOGICAL OBSERVATIONS

By L. T. SAMUELS

Free-air temperatures during December were below normal at all stations except from the surface to 2,000 meters at Ellendale. (See Table 1.) The largest departures occurred at Due West and Groesbeck.

The free-air relative humidities were mostly above normal with the largest departures occurring in the higher levels at Ellendale.

Free-air vapor pressures, in agreement with the temperatures, were below normal at all stations except Ellendale, with the largest departures occurring at Due West and Groesbeck.

It is interesting to note that notwithstanding the supernormal relative humidities and vapor pressures at Ellendale, the total precipitation for the month was the lowest of record (14 years), being only 0.07 inch. However, the month had 15 cloudy and 10 partly cloudy and 6 clear days.

Free-air resultant winds for the month at the 1,000-meter level contained a pronounced westerly component at all stations east of the Rockies and north of latitude 30°. The resultant velocities ranged from 4 meters per second in the southern section to 8 meters per second in the north. Along the Pacific coast and northern Rocky Mountain region the resultant winds were variable and the velocities mostly light.

At 3,000 meters a westerly component prevailed at all stations, including Key West, with the highest resultant velocities in the north-central portion of the country.

The monthly resultants for a representative group of stations are shown in Table 3.